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other charge. After six ounces of the mixture had been added, the contents of the crucible was covered with fused chloride of sodium in powder, the cover replaced, and the heat carried to quiet fusion. After the flux became entirely fluid, the heat was continued for ten minutes. The crucible was then removed from the fire, and, after cooling, the metal was found as a button at the bottom.

Three crucibles, of the capacity of eight fluid ounces each, were used at a time in a furnace without artificial blast. Care is necessary not to urge the heat too high, otherwise the crucibles will not resist the action of the fluorspar flux. The French-clay crucibles (Beaufay) were used, on account of their greater freedom from iron and silica; they also resist the flux better than the Hessian, black lead, or iron crucibles. The yield of manganese, under favorable circumstances, was about twenty per cent of the chloride used.

Reduction was also tried by using fused chloride of sodium without fluorspar. The yield of metal was much less, and differing in some of its properties from that obtained with the use of fluorspar. Manganate of soda was formed when sodium chloride alone was used as a flux. Manganese thus obtained is very brittle, with a steel-white fracture so hard that a file will scarcely touch it. The edges of the fractures scratch, and almost cut, glass. The metal retains the brightness of a fractured surface after prolonged exposure to the air, and appears not more disposed to oxidation than iron. It is entirely passive to magnetic attraction.

The specific gravity of the metal obtained when fluorspar was used was 7.072. When remelted under fused sodium chloride, the specific gravity rose to 7.153. The metal obtained without the use of fluorspar was less brittle, and had a different fracture. Its specific gravity was 7.231. Authorities differ regarding the specific gravity of manganese, ranging it from 6.85 to 8.013.

An examination of the metal obtained, using fluorspar as a flux, showed the absence of iron and the presence of calcium, demonstrating the reduction of some of the latter metal from the spar. This may account in a measure for the increased specific gravity on remelting under sodium chloride, as also the greater specific gravity of the metal when the spar was not used. As calcium has the specific gravity of 1.57, a small amount alloyed with the manganese would sensibly affect its gravity.

#### ETHNOLOGY.

##### Marriage Ceremonies of the Bilqula.

MR. PH. JACOBSEN, in a letter to his well-known brother, Capt. A. Jacobsen, gives the following description of the marriage ceremonies of the Bilqula of British Columbia. An Indian who intends to marry, calls upon his intended wife's parents, and arranges with them how much he is to pay for permission to marry the girl. Among people of high descent this is done by messengers, sometimes as many as twenty being sent to call on the girl's father. They are sent by the man's parents before the young man is of age. In many instances both man and girl are not more than eight or nine years

The messengers go in their boats to the girl's house, and marry on their negotiations without going ashore, where the relatives of the girl are standing. The messengers of the young man's parents praise his excellence and noble descent; the great exploits of his father, grandfather, and ancestors; their wars, victories, and hunting expeditions; their liberality at festivals; etc. Then the girl's relatives praise the girl and her ancestors, and thus the negotiations are carried on. Finally a number of blankets are thrown ashore by the messengers; and the girl's relatives protest, and maintain that the number is not sufficient to pay for the permission to marry the girl. In order to obtain their consent, new blankets are thrown ashore one by one, the messengers continually maintaining that the price paid is too great. Generally from twenty to fifty blankets, each of the value of about half a dollar, are paid.

After this the boy and the girl are considered engaged. When they come to be grown up, the young man has to serve a year to his father-in-law. He must fell trees, fetch water, fish, and hunt for the latter. During this time he is called Kos, which means

"one who woos." After a year has elapsed, the marriage is celebrated. At this time great festivals are celebrated. Seven or eight men perform a dance. They wear dancing aprons and leggings, trimmed with puffin-beaks, hoofs of deers, copper plates, and bells. If the groom should be a wealthy man, who has presented to his wife many small copper plates, such as are used as presents to a bride, these are carried by the dancers. The singing-master, who beats the drum, starts a song in which the dancers join. The song used at the marriage festival is sung in unison, while in all other dances each dancer has his own tune and song. The first dancer wears a ring made of cedar-bark. His hair is strewn with eagle-down, which flies about when he moves, and forms a cloud around his head. The groom presents the first dancer with a piece of calico, which the latter tears to pieces, which he throws down in front of each house of the village, crying, "Hoip!" in order to drive away evil spirits. These pieces of calico which he throws down in front of the houses have a lucky meaning, and at the same time express the idea that the groom, when he comes to be a wealthy man, will not forget the inhabitants of any house when giving a festival. The dancers swing their bodies and arms, stamp their feet, and show the copper plates to the lookers-on. Then the bride's father brings a great number of blankets, generally double the number of those he had received from the groom, and gives them to his daughter. The bride orders a few blankets to be spread before the groom. She sits down, and he puts his hand upon her head. Then the groom is given for each of the parts of his body one or more blankets. Finally he is given a new blanket. After the bride's father has given a blanket to each dancer and to the drummer, the villagers are invited to a great feast. At this time groom and bride eat for the first time together.

#### HEALTH MATTERS.

##### American Public Health Association.

THE preliminary circular relating to the next meeting of this association has just been issued. The meeting will be held at Brooklyn, N.Y., Oct. 22-25, 1889.

The executive committee have selected the following topics for consideration at said meeting:—1. The causes and prevention of infant mortality. 2. Railway sanitation: (a) Heating and ventilation of railway passenger-coaches; (b) Water-supply, water-closets, etc.; (c) Carrying passengers infected with communicable diseases. 3. Steamship sanitation. 4. Methods of scientific cooking. 5. Yellow-fever: (a) The unprotected avenues through which yellow-fever is liable to be brought into the United States; (b) The sanitary requirements necessary to render a town or city proof against an epidemic of yellow-fever; (c) The course to be taken by local health authorities upon the outbreak of yellow-fever. 6. The prevention and restriction of tuberculosis in man. 7. Methods of prevention of diphtheria, with results of such methods. 8. How far should health authorities be permitted to apply known preventive measures for the control of diphtheria. 9. Compulsory vaccination. 10. Sanitation of asylums, prisons, jails, and other eleemosynary institutions.

Papers upon miscellaneous sanitary subjects not included in the above list will be received by the executive committee, subject to the requirements of the By-Laws. Preference will be given, however, to papers upon the subjects selected by the committee in making up the daily programme of the meeting.

It is confidently expected that the Brooklyn meeting will be the largest and most important ever held by the association. The local committee of arrangements have already organized, and have the preliminary local work well under way. No efforts will be spared to make the meeting a grand success, and every arrangement necessary to the comfort of those attending will be made in ample season.

The growth and work of this association constitute a monument to American hygiene. It was organized in 1872, and has grown to be the largest association of its kind in the world, and embraces in territorial area the United States, the Dominion of Canada, and the Provinces. It has published fourteen large volumes on health subjects, one volume on disinfectants (which is the most complete